

radiotherapy and chemotherapy are given simultaneously, modifications in dosages must be made or serious synergistic effects may occur. Development of a treatment program will usually require consultation among a surgeon, a radiotherapist and an oncologist.

Pulmonary macrometastases, although ominous, can be wedged-resected, with occasional satisfying prolongation of disease free intervals. Several lesions, even if bilateral, may still be amenable to resection. Failure of local control, rapid appearance of pulmonary lesions, or perhaps a rapid "doubling time" is a relative contraindication to this somewhat aggressive but occasionally rewarding palliative surgical therapy. The effects of manipulating the immune system are still unpredictable, but work is progressing in this difficult but intriguing area.

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The Use of Antibiotics in Open Fractures

UNTIL RECENTLY the use of prophylactic systemic antibiotics in open fracture treatment was a controversial subject with some published reports supporting their use and others finding them of little or no value.

In 946 open fractures treated at the Los Angeles County/University of Southern California Medical Center, we have found that bacterial contamination was present in approximately 63 percent of the open wounds cultured. The infection rate was significantly reduced by the use of an antistaphylococcal wide-spectrum agent (cephalothin [Keflin]) in patients with open wounds (2.3 percent), when compared with a control group receiving no antibiotics (13.9 percent) and a control group receiving penicillin and streptomycin (9.7 per cent).

Based on these data, wide-spectrum systemic antibiotics should be used as an adjunct to surgical irrigation and debridement to treat contaminated wounds and reduce the incidence of infection. Wide-spectrum antistaphylococcal systemic

antibiotics should be administered as soon as possible following injury after a wound culture has first been taken. The selection of antibiotics will vary from institution to institution with the experience of what organisms and what sensitivities are found in open fractures being used as a guide to antibiotic selection. Antibiotics that seem effective based on our experience are a cephalosporin used alone, a synthetic penicillin given with an aminoglycoside, and a cephalosporin given with an aminoglycoside.

The term prophylactic antibiotics is not appropriate since open fracture wounds are contaminated, and surgeons are in fact treating by giving antibiotics. Based on our data the use of antibiotics in the management of open fractures is unequivocally indicated.

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Scoliosis Screening

SCHOOL SCREENING PROGRAMS for detection of adolescent scoliosis have been endorsed by the Scoliosis Research Society and the American Academy of Orthopaedic Surgery. Many such programs have been implemented across the nation. The primary screening program is done in the school. The forward bend test is a reasonably discriminating method of detecting asymmetry of the back suggesting scoliosis. The technique is easily taught and with a minimum of experience the nurse examiner will become very proficient. This becomes an efficient program requiring physician participation only at the secondary screening level. Most programs in primary screening detect about 10 percent of children as having some back asymmetry.

At the secondary screening centers, single standing anteroposterior roentgenograms of the spine are taken for permanent record of the curvature and appropriate measurements of curves are made. False positive findings on primary screening occur in about 2 percent of cases. Of the remaining 8 percent, most of the students receive continued observation and are referred to physicians in the community. About 1 percent are referred for specific treatment, usually bracing. The goal of screening programs is to

identify early those youngsters who have scoliosis and through judicious treatment avoid the need for surgical operation.

Concerns over radiation exposure are important. It has been determined that a single screening radiograph results in an averaged absorbed dose of 173 millirads. Environmental exposure is approximately 100 millirads per year. Gonadal doses were approximately 21 millirads for males and 104 millirads for females. Although these doses are small, continued concern about long-term effects of low dose radiation remain. These effects are at present unknown. Studies are un-

derway to correlate radiographically identified curves with topographic photography methods; that is, moire photography. Early results suggest this to be a sensitive screening technique and may eventually eliminate the need for most early x-ray studies.

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